AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for active noise cancellation using independent component analysis~~which is characterized by~~ comprising the steps of:

~~adaptation of~~using a filter to ~~get~~ obtain components ~~among signal components of the~~ of a primary input of an active noise cancellation system which are independent of noise components~~which form the~~,

the noise components forming a secondary input at ~~the~~ an output end ~~in~~ of the active noise cancellation system[[,]]; ~~wherein the~~ and

said filter subjecting a mixture of signal and noise that forms the primary input to independent component analysis taking into account secondary or higher statistical characteristics of the noise components to obtain said components of the primary input which are independent of the noise components.

2. (Currently Amended) The method for active noise cancellation using independent component analysis according to claim 1, wherein a signal cancellation range corresponding to active noise is extended for the system which acquires many noise signals or mixtures of signal and noise by increasing the number of inputs or outputs of the said active noise cancellation system.

3. (Currently Amended) The method for active noise cancellation using independent component analysis which is characterized by canceling active noise by including the following steps~~or an arbitrary step;~~:

in a cancellation method of active noise cancellation system with a feedback structure,

(a) wherein a zero delay coefficient, $w_{ii}(0)$, scales the data to maximize the information transmitted through the nonlinear function,

(b) wherein a delay coefficient, $w_{ii}(k)$, $k \neq 0$, whitens each output from the corresponding input signal temporally, and

(c) wherein a coefficient in a feedback cross filter, $w_{ij}(k)$, $i \neq j$, decorrelates each output $\varphi(_i(t)) = \frac{\frac{\partial P(u_i(t))}{\partial u_i(t)}}{P(u_i(t))}$ from all other recovered ~~signal~~ signals $u_j(t)$,

wherein the said $P(u_i(t))$ approximates the probability density function of estimated source signal $u_i(t)$.

4. (Currently Amended) The method for active noise cancellation using independent component analysis according to claim 3, wherein a signal cancellation range corresponding to active noise is extended for the system which acquires many noise signals or mixtures of signal and noise by increasing the number of inputs or outputs of the said active noise cancellation system.

5. (Currently Amended) The method for active noise cancellation using independent component analysis which is characterized by controlling active noise by learning each adaptive filter coefficient according to the following expression in an active noise cancellation system, wherein the mixture x_i of signal and noise that forms the primary input and noise x_2 that forms the secondary input[[.]] is related by the following expression:

$$\varphi(_i(t)) = \frac{\frac{\partial P(u_i(t))}{\partial u_i(t)}}{P(u_i(t))}$$

~~[expression 11]~~

$$\Delta w_{ii}(0) \propto 1/w_{ii}(0) - \varphi(u_i(t))x_i(t),$$
$$\Delta w_{ii}(k) \propto -\varphi(u_i(t))x_i(t-k),$$

$$\Delta w_{ij}(k) \propto -\varphi(u_i(t))u_j(t-k),$$

~~herein~~ wherein, the said $w_{ii}(0)$ is a zero delay coefficient in a direct filter, $w_{ii}(k)$, $k \neq 0$ is a delay coefficient in a direct filter, $w_{ij}(k)$, $i \neq j$ is a coefficient in a feedback cross filter, Δ before ~~of~~ each coefficient is a change amount of the corresponding coefficient, t is a sample index, and $P(u_i(t))$ approximates the probability density function of estimated source signal $u_i(t)$.

6. (Currently Amended) The method for active noise cancellation using independent component analysis according to claim 5, which is characterized by obtaining the said $u_i(t)$ by the following expression[[.]]:

~~[Expression 12]~~

$$u_1(t) = \sum_{k=0}^{K} w_{11}(k)x_1(t-k) + \sum_{k=1}^{K} w_{12}(k)u_2(t-k),$$
$$u_2(t) = \sum_{k=0}^{K} w_{22}(k)x_2(t-k)$$

7. (Currently Amended) The method for active noise cancellation using independent component analysis according to claim 5, wherein a signal cancellation range corresponding to active noise is extended for the system which acquires many noise signals or mixtures of signal and noise by increasing the number of inputs or outputs of the said active noise cancellation system.